NASA Systems Engineering Excellence Initiative

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Office of the Chief Engineer Vision for Systems Engineering

Vision: **A premier systems engineering capability widely recognized for its leadership and expertise in the engineering of systems and subsystems to enable NASA to provide leading edge aerospace research, products and services**

Mission: **Develop and implement the SE framework, and promote the environment for excellence and the revolutionary advancement of the system engineering capability to anticipate and meet the needs of NASA Programs and Projects.**

Goals

Stimulate and enable the development and advancement of a sound systems engineering capability necessary for success in fulfilling the challenging and ambitious goals of the NASA Enterprises

- Ensure ***continuous improvement*** of the NASA engineering workforce ***through relevant education, training, and work experiences.***
- Ensure ***sound and effective*** discipline and ***systems engineering***.
- Development and implementation of *Advanced Engineering Infrastructure* to further enable the achievement of Enterprise goals.
- Provide ***value-added cross-Enterprise products and services*** that enable the infusion of technology, knowledge, and capabilities to support innovation in engineering and push the state of the art.
- Increase participation, membership, and ***leadership in recognized*** national and international ***engineering organizations.***

Specific Needs

Need: Consistency in basic approach to systems engineering

Need: Common framework of recognized best practices that guides the systems engineering of aerospace program and project products and capabilities.

Need: Common systems engineering terminology and definitions to enhance communication and collaboration among engineering teams across the Agency and with external partners and customers.

Need: Basis for assessing and continuously improving systems engineering capabilities.

The License…

SEWG CHARTER

The SEWG:

Is chartered (by EMB), in support of Strategic Plan to develop and document a common framework for systems engineering in NASA

TERMS of REFERENCE

"… This Framework will describe the requirements for SE processes required to engineer aerospace products and capabilities …"

NASA's Systems Engineering Excellence Initiative Roles and Responsibilities

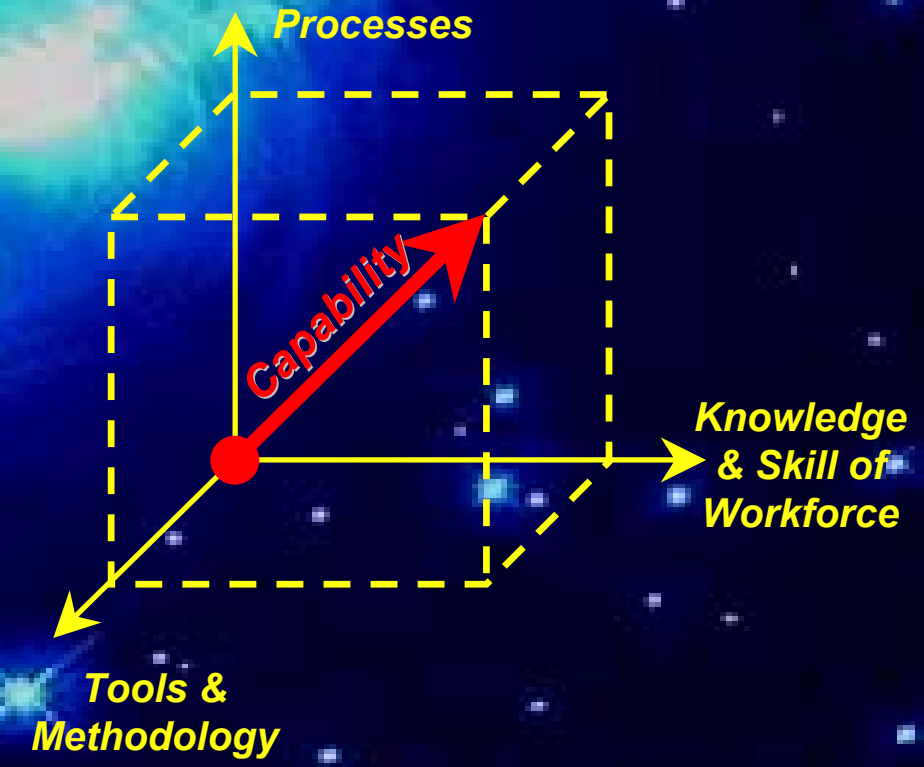
- Systems Engineering Working Group (SEWG)
  - Plan, develop, and execute the project.
  - Coordinate project products within members' Centers
- Engineering Management Board (EMB)
  - Provide project oversight and approvals.
- Enterprises & Centers
  - Provide members of the SEWG.
  - Provide needed support for reviews, pilots, and assessments.
  - Verify suitability for accomplishing programs and projects.
- Customers (NASA engineering community, advanced technology teams, payload developers, the Office of the Chief Engineer, Enterprise management, Center management, program and project managers, and external partners)
  - Product reviews.
- Other Stakeholders (PMC, PMCWG, SMOs, Software Working Group)
  - Liaison and review of products.

SEWG Expectations

- Members of the SWEG represent the interests of NASA, and not the parochial interests of a particular Center
- Commitment to an agency wide product that we can be proud of
- Willingness to take an introspective look at the present state and dare to push the envelope for what it could be
- Leadership within the SEWG and at the Centers for the vision to become reality

Framework

- Consistency in systems engineering approach at all levels
- Culture based on rapid prototyping, modeling and simulation capability for development of multiple and diverse designs
- Experienced, well trained engineers in application of process, tools, methodology, and customer relationship/interaction
- Continuous improvement through self assessment at the personal and organizational level



SE Training and Education

- Subgroup of SEWG
- Engineering Career Development

NASA's Systems Engineering Excellence Initiative

Summary

- Agency initiative to improve SE Capability
- Framework defined and subgroups identified
- The NASA Software (SWG) and Systems Engineering (SEWG) working groups integrating common efforts
- SE NPG planed for 2003 Rollout